

Serial No.: 10/519,242
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Complete set of claims

1(currently amended). An anti-reflective coating composition which comprises a fluorine-containing polymer, an acid, an amine and an aqueous solvent capable of dissolving these components, further where the coating composition has a pH ranging from about 1.0 to about 6.0, and further where the fluorine-containing polymer is a polymer comprising a polymer unit represented by the following general formula (I),



wherein R_f represents a straight or branched perfluoroalkyl group which may contain an etheric oxygen atom, further wherein the acid is at least one member selected from the group consisting of sulfuric acid, hydrochloric acid, nitric acid, phosphoric acid, hydrofluoric acid, hydrobromic acid, alkylsulfonic acid, alkylbenzenesulfonic acid, alkylcarboxylic acid, alkylbenzenecarboxylic acid, and those obtained by replacing all or part of the hydrogen atoms of the aforesaid alkyl group by fluorine atoms, and further where alkyl of the acid is 1 to 20 carbon atoms.

2(previously amended). The anti-reflective coating composition as described in claim 1, wherein the fluorine-containing polymer further comprises a unit represented by the following general formula (II):



wherein X represents a fluorine atom or a chlorine atom.

3(canceled).

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4(original). The anti-reflective coating composition as described in claim 1, wherein the amine is at least one member selected from the group consisting of NH_3 , $\text{N}(\text{CH}_3)_4\text{OH}$, alkanolamine, alkylamine and aromatic amine.

5(original). The anti-reflective coating composition as described in claim 1, wherein the aqueous solvent is water.

6(previously amended). A pattern-forming method which includes a step of applying the anti-reflective coating composition of claim 1 on a photoresist film and, if necessary, a heating step.

7(previously presented). The anti-reflective coating composition as described in claim 1, where the coating composition has a pH ranging from about 1.0 to about 4.0.

8(previously presented). The anti-reflective coating composition as described in claim 1, where the coating composition has a pH ranging from about 1.6 to about 2.6.

9(previously presented). The anti-reflective coating composition as described in claim 2, where the coating composition has a pH ranging from about 1.0 to about 6.0.

10(previously presented). The anti-reflective coating composition as described in claim 2, where the coating composition has a pH ranging from about 1.0 to about 4.0.

11(previously presented). The anti-reflective coating composition as described in claim 2, where the coating composition has a pH ranging from about 1.6 to about 2.6.

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12(currently amended). The anti-reflective coating composition according to claim 1, wherein the acid is ~~at least one member selected from a group consisting of an inorganic acid and an organic acid, where the organic acid is selected from alkylsulfonic acid, alkylbenzenesulfonic acid, fluorinated alkylcarboxylic acid, alkylbenzenecarboxylic acid, and those obtained by replacing all or part of the hydrogen atoms of the aforesaid alkyl group by fluorine atoms~~ dodecylbenzenesulfonic acid.